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Nutritive components as safe immune-enhancers in novel and existing vaccine delivery systems

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In the past century, vaccinologists have attempted to mimic the pathogens in their immune-enhancing capacity and thus to induce danger signals. This led to the development of life-saving vaccines based on live attenuated viruses and bacteria as well as toxoids. In keeping with the same dogma of mimicking pathogens' danger signals in host cells, intense research in vaccine adjuvant discovery has focused on toll like receptors, mutant toxins and viral and bacterial vectors. However, recent evidence suggests that nutritive components such as vitamins and a subclass of polyphenols also possess immunomodulating properties without the potential toxic side effects of mimicking danger signals in traditional adjuvant research. We have designed a chemically well-defined and GMP-manufacturable Nutritive Immune-enhancing Delivery System (NIDS) composed of combination of select vitamins, and a plant based polyphenol in various delivery systems including organic and inorganic pharmaceutically acceptable carriers. We have generated impressive and significant enhancement of both local and systemic immune responses in a mouse model following mucosal and systemic vaccinations with NIDS and compared the responses to vaccinations with other licensed or in development vaccine adjuvants and delivery systems. This approach promises to open a new era in the design and development of safe and effective vaccines.

Biography

Dr. Michael Vajdy is Co-founder, President and Chief Scientific Officer of EpitoGenesis, Inc., established in 2008. Dr. Vajdy is a mucosal immunologist and Vaccinologist with over 20 years of direct academic and industry experience in designing mucosal and systemic adjuvants and vaccines, studying mucosal and systemic B and T cell immune induction mechanisms and long-term immunological memory, and product development. Following his Ph.D. Studentship at Goteborg University under the supervision of Dr. Nils Lycke, a prominent mucosal immunologist, Dr. Vajdy completed post doctoral fellowships with Dr. Katherine Knight, then President of the American Association of Immunology and Dr. Marian Neutra, a renowned expert in mucosal biology and M cells of the intestinal Peyer's patches and mucosal HIV vaccine development. Dr. Vajdy was recruited to Chiron Corporation (later Novartis Vaccines and Diagnostics, Inc.) where his work was instrumental in the development of mucosal and systemic vaccine products against various infectious diseases. Dr. Vajdy advanced one of these products, i.e. HIV-env, to non-human primate studies in which he demonstrated vaccine efficacy in protection against SHIV challenges. A clinical trial, based on Dr. Vajdy's results from this macaque study was then conducted. He remained there for 9.5 years with increasing responsibilities including project leadership for a vaccine manufacturing platform technology. He also held simultaneous academic positions as Adjunct Clinical Assistant Professor with the Department of Internal Medicine, Division of Infectious Diseases and Visiting Associate Professor at Department of Medical Microbiology and Immunology, University of California, Davis. He was also a Faculty member with the graduate group, Department of Comparative Pathology, University of California, Davis. In these capacities, he trained student/fellows and wrote collaborative NIH grants. Dr. Vajdy has authored over 50 peer reviewed manuscripts and book chapters; he is the editor of a book entitled "Immunity against Mucosal Pathogens" (Springer, 2008) and has been PI or Investigator on several funded NIH grants.

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